REMARKS

Claims 2, 3, and 8-17 are currently pending in this application, with claim 14 being independent. Claims 10-13 were withdrawn by the Examiner following a restriction requirement. Applicants thank Supervisory Examiner Glenn A. Caldarola for participating in the interview with Applicant's representative on November 17, 2009.

During the interview, Applicant's representative discussed the differences between the subject matter as recited in claim 14 and the cited prior art reference Cheng (US 4,229,309). Specifically, the failure of Cheng to disclose a non-crystalline fuel additive active ingredient that is dispersed in liquid and which forms a corresponding metal oxide having a crystalline porous structure when heated in a combustion flame was discussed.

In view of the following remarks, Applicants submit that the claims are allowable and the application is in condition for allowance.

Claim rejections under 35 U.S.C. § 103(a)

Claims 2, 3, 8, 8 and 14-17 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Cheng et al., (US 4,229,309). Applicants respectfully disagree.

Independent claim 14 recites,

A fuel additive composition for the reduction/removal of vanadium-containing ash deposits in gas turbines and other by combustion of vanadium-containing fuel driven apparatuses, **said composition comprising an active ingredient dispersed in at least one liquid selected from the group consisting of liquids soluble in oil,** by means of at least one dispersant selected from the group consisting of low molecular weight dispersants and high molecular weight dispersants,

wherein said active ingredient is an inorganic oxygen-containing compound of a metal in particle, non-crystalline form,

wherein when heated in a combustion flame said active ingredient liberates a gaseous substance by evaporation and forms a corresponding metal oxide having a crystalline porous structure,

wherein dehydration and decomposition of said active ingredient takes place in the combustion process,

wherein said active ingredient comprises a compound of a metal capable of forming a vanadate with vanadium of said ash deposits, and

wherein said active ingredient and said corresponding metal oxide have a particle size distribution within the range of from 0.1 to 2 micron, and said corresponding metal oxide having a density of at most 2.0 g/cm^3.

[Emphasis added].

Cheng simply does not teach or suggest a fuel additive composition comprising an active ingredient dispersed in at least one liquid selected from the group consisting of liquids soluble in oil, wherein the active ingredient is an inorganic oxygen-containing compound of a metal in particle, non-crystalline form, as recited in claim 14.

An example of the fuel additive as recited in claim 14, is described, in example 1 in which active ingredient magnesium hydroxide in non-crystalline form (powder) is dispersed in Rhodafac ester, (see page 24, lines 8 to page 25, lines 20). As explained in Examples 1 and 2 in the specification, when a metal hydroxide such as magnesium hydroxide ($Mg(OH)_2$) in particle form (non-crystalline form) is heated, water leaves the magnesium hydroxide metal oxide crystals are formed, (in the examples magnesium oxide (MgO) is formed) and during formation water is released.

In contrast to the fuel additive composition as recited in claim 14, the product of Cheng is a magnesium oxide (MgO) dispersion, not an inorganic oxygen-containing compound of a metal in particle, non-crystalline form (see col. 7, line 5-8, which refer to the product as being exemplified in Example 12, col. 4, line 66 to col. 5, lines 9). Moreover, although Cheng describes obtaining MgO dispersion via a dehydration of magnesium hydroxide, this occurs during production and **Cheng does not teach or suggest that magnesium hydroxide is part of a fuel additive**, as recited in instant claim 14.

As such, it is clear that Cheng fails to teach or suggest the fuel additive as recited in claim 14.

Moreover, Applicants discovered that there is a clear advantage to a fuel additive comprising an active material which is an inorganic oxygen-containing compound of a metal in particle, non-crystalline form. That advantage is a reduced ash formation.

The rapid degradation of the inorganic oxygen-containing compound of a metal in particle, non-crystalline during combustion provides a better distribution of metal oxide in the combustion gases and therefore a larger and more reactive surface area and better chance for magnesium to react with vanadium. This is accomplished because very small nano-sized metal oxide particles will be formed by micro explosions in the flame when the nano-sized metal hydroxide particles are transformed to metal oxide. In addition, the micro explosions accelerate the metal oxide crystals in all directions increasing speed frequency for the merging of the corrosive ash droplets.

Because of the formation of small, low density and porous metal oxide crystals, the instant fuel additive composition inhibits deposit build-up from interfering with the heat transfer on the tubular walls and thus result in a higher energy out-put as compared to conventional metal oxide based products such as described in Cheng.

On the other hand, Cheng allows the degradation to take place already at a production stage during manufacturing of his product and the MgO is stabilized in a liquid solution and used as fuel additive (see Cheng claim 11). Nothing more happens to the MgO in the flame, so the surface area of magnesium does not change when the product MgO is used.

Moreover, the advantageous results obtained by using the fuel additive as recited in claim 14 are unexpected. As clearly demonstrated in the parallel test runs with a conventional high performance additive in the gas-turbine power plant described in Example 4.

In Example 4, the fuel additive as recited in claim 14 was compared to magnesium oxide as disclosed in Cheng, and an unexpected improvement in the reduction of ash deposits was obtained using the composition recited in claim 14, (see page 28, line 25 to page 31, line 6). As explained in Example 4, ash deposits were easy to remove by hand when the fuel additive as recited in claim 14 was used, (see page 29, lines 31-35).

In contrast, the ash deposits could not be removed by hand when the MgO product as disclosed by Cheng was added into the fuel, (see page 29, lines 31-35).

Thus, a person having ordinary skill in the art would not have found it obvious to modify Cheng in such a manner as to achieve the fuel additive as recited in claim 14 as the subject matter of claim 14 achieves an unexpectedly improved reduction in ash deposits.

Accordingly, it is clear that claim 14 is allowable over the cited prior art. Furthermore, claims 2, 3, 8 9 and 14-17 depend from and further define the subject matter of claim 14 and therefore are also allowable.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicant's attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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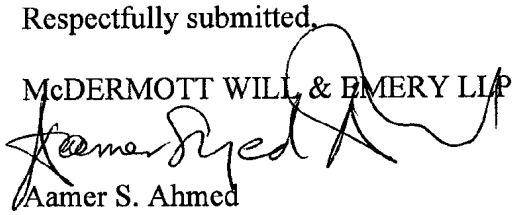

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